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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,605	08/18/2003	Bruce A. Diner	CL2119USNA	4929

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EXAMINER

DESAI, ANAND U

ART UNIT	PAPER NUMBER
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1653

DATE MAILED: 08/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/643,605

Applicant(s)

DINER ET AL.

Examiner

Anand U. Desai, Ph.D.

Art Unit

1653

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 20031208&20040903.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claims 1-10, drawn to an isolated metalized protein polymer in the reply filed on June 14, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 1-10 are currently pending and are under examination.

The requirement is still deemed proper and is therefore made FINAL.

### ***Priority***

2. Acknowledgment is made of applicant's claim for priority under 35 U.S.C. 119(e). The priority date is August 21, 2002.

### ***Information Disclosure Statement***

3. The information disclosure statements (IDSs) submitted on December 8, 2003 and September 3, 2004 are being considered by the examiner. The Aslett reference is not being considered because it is not present in the application.

*Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kirsch, R. et al. (Thin Solid Films 305: 248-253 (1997); 12/8/03 IDS document).

Kirsch, R. et al. disclose the electroless nickel plating of microtubules using a lead catalyst. For electroless metal plating of poorly conducting biomolecular templates, the template surface has to be activated with noble metal atoms or clusters. The activation makes possible the subsequent catalytic reduction of metal ions or complexes from aqueous solutions (see page 250, Right hand column, 1<sup>st</sup> paragraph). The microtubules have an outer diameter of 25 nm (see Abstract). Microtubules are tubular structures that comprise tubulin. Kirsch, R. et al. find that a nickel thickness of 10 nm appears as a continuous film by electron microscopy (see paragraph bridging pages 252-253). Kirsch, R. et al. disclose the fabrication of metallic nanotubes with geometrical aspect ratios up to 200 (see page 253, Summary section, current application, claims 1-8).

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6. Claims 1, 2, and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Hainfeld, J. (Science 236: 450-453 (1987)).

Hainfeld, J. discloses the covalent linkage of a gold cluster with a single antigen-binding antibody fragment (Fab'). Hainfeld, J. also describes the conjugation of gold complexes with Protein A, which is an immunoglobulin binding protein (claim 2). The IgG-Protein A-gold complex has an approximate diameter of 27 nm to 50 nm (see page 450, 1<sup>st</sup> paragraph of Introduction). The Fab'-gold complex is measured to be approximately 5.4 nm (see Figure 1B, and 1<sup>st</sup> paragraph of Introduction). The Fab'-gold complex is covalently linked through a maleimide group on the gold cluster and the free sulfhydryl group on the Fab' molecule (see Figure 3, current application, claims 1, 2, and 9).

7. Claims 1-7, and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Bekerredjian, R. et al. (Ultrasound in Med. & Biol. 28(5): 691-695 (2002)).

Bekerredjian, R. et al. disclose the immobilization of gold colloids on microtubules. Bekerredjian, R. et al. show by electron microscopy the immobilization of gold colloids on microtubule walls. The outer diameter of the microtubules was 25 nm. Based on the scale of resolution, the gold particles appear as interrupted particles (see page 692, Results, 1<sup>st</sup> paragraph, and Figure 1C, current application, claims 1-7, and 9).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kirsch, R. et al. (Thin Solid Films 305: 248-253 (1997); 12/8/03 IDS document) in view of Murakami et al. (U.S. Patent 5,803,957).

The Kirsch, R. et al. reference is discussed above in the 102(b) rejection. Kirsch, R. et al. does not explicitly disclose the use of gold to coat microtubules.

Murakami et al. disclose the use of water-soluble gold compound in an electroless plating process (see Abstract). The process produces a gold film on a non-conductive substrate, such as the non-conductive microtubules, in a gold plating bath having a pH of 6 to 9 (col. 4, line 63-col. 5, line 4).

A person of ordinary skill in the art would have been motivated to use the water-soluble gold compound disclosed by Murakami et al. in an electroless plating process to coat microtubules as disclosed by Kirsch, R. et al., because of gold's physical characteristics of corrosion resistance, and the fact that it does not oxidize in air, so electrical conductivity stays uniform over longer periods of time. Therefore, it would have been obvious to the person having ordinary skill in the art to use the water-soluble gold compound disclosed by Murakami et al. in an electroless plating process to coat microtubules as disclosed by Kirsch, R. et al. (current application, claims 9, and 10).

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***Conclusion***



10. No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anand U. Desai, Ph.D. whose telephone number is (571) 272-0947. The examiner can normally be reached on Monday - Friday 7:00 a.m. - 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jon P. Weber can be reached on (517) 272-0925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

August 17, 2005



**ROBERT A. WAX  
PRIMARY EXAMINER**